

Test pressure means the pressure to which a tank is subjected to determine structural integrity.

Toughness of material means the capability of a material to absorb energy represented by the area under a stress strain curve (indicating the energy absorbed per unit volume of the material) up to the point of rupture.

Vacuum cargo tank means a cargo tank that is loaded by reducing the pressure in the cargo tank to below atmospheric pressure.

Variable specification cargo tank means a cargo tank that is constructed in accordance with one specification, but that may be altered to meet another specification by changing relief device, closures, lading discharge devices, and other lading retention devices.

Void means the space between tank heads or bulkheads and a connecting structure.

Welded flange means a flange attached to the tank by a weld joining the tank shell to the cylindrical outer surface of the flange, or by a fillet weld joining the tank shell to a flange shaped to fit the shell contour.

(b) *Design certification.* (1) Each cargo tank or cargo tank motor vehicle design type, including its required accident damage protection device, must be certified to conform to the specification requirements by a Design Certifying Engineer who is registered in accordance with subpart F of part 107 of this title. An accident damage protection device is a rear-end protection, overturn protection, or piping protection device.

(2) The Design Certifying Engineer shall furnish to the manufacturer a certificate to indicate compliance with the specification requirements. The certificate must include the sketches, drawings, and calculations used for certification. Each certificate, including sketches, drawings, and calculations, shall be signed by the Design Certifying Engineer.

(3) The manufacturer shall retain the design certificate at his principal place of business for as long as he manufactures DOT specification cargo tanks.

(c) *Exceptions to the ASME Code.* Unless otherwise specified, when exceptions are provided in this subpart from

compliance with certain paragraphs of the ASME Code, compliance with those paragraphs is not prohibited.

[Amdt. 178-89, 55 FR 37055, Sept. 7, 1990, as amended by Amdt. 178-98, 58 FR 33306, June 16, 1993; Amdt. 178-118, 61 FR 51339, Oct. 1, 1996; 68 FR 19277, Apr. 18, 2003; 68 FR 52370, Sept. 3, 2003; 68 FR 75752, Dec. 31, 2003]

§ 178.337 Specification MC 331; cargo tank motor vehicle primarily for transportation of compressed gases as defined in subpart G of part 173 of this subchapter.

§ 178.337-1 General requirements.

(a) *ASME Code construction.* Tanks must be—

(1) Seamless or welded construction, or a combination of both;

(2) Designed, constructed, certified, and stamped in accordance with Section VIII of the ASME Code (IBR, see § 171.7 of this subchapter);

(3) Made of steel or aluminum; however, if aluminum is used, the cargo tank must be insulated and the hazardous material to be transported must be compatible with the aluminum (see §§ 178.337-1(e)(2), 173.315(a) table, and 178.337-2(a)(1) of this subchapter); and

(4) Covered with a steel jacket if the cargo tank is insulated and used to transport a flammable gas (see § 173.315(a) table Note 11 of this subchapter).

(b) *Design pressure.* The design pressure of a cargo tank authorized under this specification shall be not less than the vapor pressure of the commodity contained therein at 115 °F. or as prescribed for a particular commodity in § 173.315(a) of this subchapter, except that in no case shall the design pressure of any cargo tank be less than 100 p.s.i.g. nor more than 500 p.s.i.g.

NOTE 1: The term *design pressure* as used in this specification, is identical to the term *MAWP* as used in the ASME Code.

(c) *Openings.* (1) Excess pressure relief valves shall be located in the top of the cargo tank or heads.

(2) A chlorine cargo tank shall have only one opening. That opening shall be in the top of the cargo tank and shall be fitted with a nozzle that meets the following requirements:

(i) On a cargo tank manufactured on or before December 31, 1974, the nozzle